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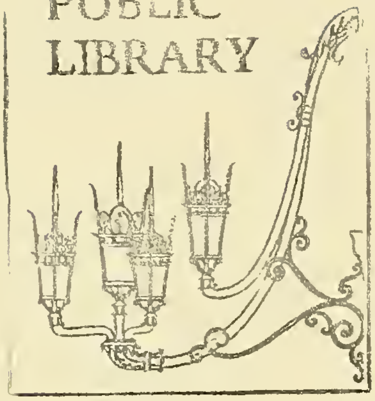

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Longwood Medical Area (LMA)
Master Plan
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Longwood Medical Area (LMA)
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Introduction

The Longwood Medical Area (LMA), an area predominated by medical and academic uses, is in many senses a city within a city. Although it does not provide the full range of functions of a city, the LMA does deliver so many related and interdependent services that it can be viewed as a unique and self-contained entity within Boston.

The physical character of the Longwood Medical Area should provide a sense of this uniqueness. The LMA can become physically what it is pragmatically -- a place dedicated to healing, nurturing and learning; an area where a sense of community and place is developed through thoughtful and insightful planning. This report is an effort on the part of the Boston Redevelopment Authority and the

Medical Area Service Corporation (MASCO) to define the physical character of the LMA and to develop a set of guidelines which encourage development consistent with that character. These guidelines were undertaken to encourage appropriate growth by area institutions, to promote compatible long-range planning and to protect the long-term interests of the LMA and surrounding areas as a whole.

This document is organized into three major sections. The first section examines current conditions within the LMA, including an analysis of existing structures, urban design elements, infrastructure, transportation and parking. The second sections considers the potential buildout of the LMA based upon master plans regarded by area institutions and forecasts how this proposed development might impact the area and the functions examined in section one. The final section of the document presents the proposed development policies for the LMA.

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I. Existing Conditions

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A Brief Historical Summary of Development in the Longwood Medical Area*

Early Development: 1850-1900

The Longwood Medical Area was initially the home to some of the largest landholding families of Boston. These farm estates, located above the river, marsh and swamp lands, remained in place until the end of the 19th Century. At that time, the Back Bay Landfill Project reached the Muddy River marshlands and, together with the advent of public transportation, fostered the transition to more large scale urban development.

Residential development adjacent to these estates began the first phase of this change. Boston's annexation of Roxbury in 1867, which included this area, road construction that connected this area by horsecart via the Brookline to Boston route, and the continuing progress of the Back Bay Landfill Project, which was not yet to the Muddy River marshlands, all contributed to steady residential growth during the 1870's and 1880's.

In the last decade of the 19th Century, residential development increased substantially. The landfill project was finished in this area by 1895. Electric trolley cars also came into operation in 1894 along the horsecart routes of Huntington and Longwood Avenues. In 1899, the electric trolley car was also in operation along Brookline Avenue. Fredrick Law Olmsted, who foresaw

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*Summary based on "Design and Development Options for the Longwood Medical Area," Charles G. Hilgenhurst & Associates, November, 1975

the need for urban planning, recommended in his inclusive plan for a city-wide park system in 1895 a residential grid pattern of streets for this area, to manage future growth. This subdivision plan, designed however, was never implemented.

Institutional and Residential Growth: 1900-1950

From 1900 to 1930, development boomed. Educational institutions began moving out of the city to vacant estates during 1900 to 1910, because ~~of the~~ increasing congestion from the immigrant wave and because ~~of~~ the need for additional and inexpensive land on which to grow contributed to this trend. Public transportation made this area an ideal site. In 1906, Harvard acquired 26 acres of the Francis estate and built its medical school on 11 acres, saving the rest for hospitals, which came quickly after.

The second phase of development, From 1910 to 1920, was characterized by new hospital construct ~~hospital construction became the second boom~~. Almost all of the major medical institutions ~~that are there today~~ in the area today had been built by 1925.

Throughout this period of institutional growth, residential development continued rapidly as well. Residential land south of Francis Street had been completely developed by 1910. By the end of the 1920's, then, present land use for housing, education, and hospitals was mostly defined ~~complete~~. In general, The slow growth of the Depression and War years, for the most part, simply filled in the few remaining vacant parcels.

This thirty year period of rapid growth followed a specific pattern: institutions located on estate holdings, while homes were built on previously established residential areas. Neither crowded

upon the other and, therefore, there was little conflict during this era of large scale development. The period also saw few street additions or changes. In fact, no street additions have been constructed since 1915.

Density Growth: 1950-Present

Hospital growth in the 1950's and 1960's consisted primarily of expanding upon the hospitals' ~~institutions'~~ ~~their~~ existing Sites ~~land~~, pushing buildings closer to their boundaries, replacing older structures, and starting the push upward to high-rise and tower development. By 1945, all the present major medical institutions had been constructed. Specialized treatment centers of the major institutions were the principal additions to the medical area after 1945.

Educational institutions followed a similar pattern of pressing growth to their boundaries and ~~beginning the~~ pushing upwards. These institutions also began to create separate and distinct "campus-like" environs to protect their identity and open space. This type of expansion had the effect of walling off areas and limiting internal access among the tightly bunched institutions.

Residential development, for the most part, had been completed by this time. The last residential lot to be built was the Mission Park Housing complex in 1975.

Beginning in the 1950's, high density development forced the closing or partial closing of many streets to gain additional development space, pedestrian areas, and campus environs. Surface parking lots became the only available development space. Some of these spaces were converted into structured parking to create

additional development space and to provide more parking for the increasing number of people working in the area.

The seeds of conflict between residents and institutions grew during this time period. As institutions and residential areas pushed closer together, residents became concerned that institutions would ~~attempt to~~ expand by developing large residential tracts ~~to expand~~, as was occurring in other parts of the city during the late 1960's and 1970's. The need for formal planning on an area-wide basis grew out of these community-wide pressures and conflicts. Today, the Longwood Medical Area is faced with these continuing pressures as medical and educational institutions look to the ? growing future.

2. URBAN DESIGN

Today, over 35,000 people use the Longwood Medical Area on a daily basis to perform medical research, receive or provide medical attention, to teach or to go to school, or otherwise to support these functions. Located in the north-central section of Boston, the LMA lies adjacent to the City of Brookline's eastern border. As shown on the accompanying map the LMA is bounded by The Riverway on the northwest, The Fenway on the northeast, Huntington Avenue on the southeast and Francis Street (Fenwood Road) on the southwest. The area is adjacent to the West Fenway and Mission Hill neighborhoods, and in some instances, is interspersed with residential uses, public and private schools, and some of Boston's preeminent cultural institutions. The LMA also supports a variety of commercial activities, including "neighborhood" businesses located in the Brigham Circle area and a commercial district along the west side of Brookline Avenue south of Longwood Avenue. In addition, a recent commercial center was created at the Galleria in the LMA's "downtown" at the intersection of Longwood and Brookline Avenues.

Over twenty medical, academic, and cultural institutions comprise the Longwood Medical Area, collectively occupying 178 acres, of these institutions 15 are MASCO members, including: four major Harvard-affiliated teaching hospitals (Beth Israel, Brigham and

Women's, Children's and New England Deaconess), two important research treatment centers (Dana-Farber Cancer Institute and Joslin Diabetes Center), the Harvard Medical School, Harvard School of Dental Medicine, and Harvard School of Public Health, four other historic colleges (Emmanuel, Simmons, Wheelock and Massachusetts College of Pharmacy and Allied Health Services), a girls' preparatory school (The Winsor School) and a temple (Temple Israel). In addition to these MASCO-member institutions, non-member institutions located in the LMA include the state-owned Massachusetts College of Art and the Massachusetts Mental Health Center (a Harvard affiliate), the city-owned Boston Latin High School and the former Boston English High School, the Isabella Stuart Gardner Museum, and the private, non-profit Judge Baker Children's Center.

A measurement of the LMA's stature in the nationwide medical environment is the little known fact that LMA medical institutions receive more than $150 million annually in federal research dollars. Only four states in the country, including Massachusetts (California, New York, Pennsylvania and Texas) receive as much or more funding on an annual basis. The relative importance of the LMA in research in Massachusetts alone is illustrated by the fact that more than 40% of the federal research funds funneled into the State are provided to LMA medical institutions.

Furthermore, four LMA hospitals are ranked among the 25 largest Massachusetts Acute Care hospitals, by total number of patients discharged. The combined total number of beds exceeds 2,100. Outpatient visits number more than one million annually; inpatient admissions number more than 400,000 annually.

Pedestrian Access

The pedestrian network in the LMA is defined by a hierarchy of sidewalks located along the major and minor public streets of the LMA as well as formal and informal pedestrian connections among institutions. Major pedestrian corridors include Longwood and Brookline Avenues, with numerous public transportation resources along their lengths, including MBTA bus stops and rapid transit stops. Paths between parking lots and institutions' main and secondary entrances also form an important component of the pedestrian network in the LMA. As shown on the accompanying map, the highest-used intra-institutional connections exist in a nucleus formed by Harvard Medical School, Brigham and Women's Hospital, Children's Hospital, New England Deaconess Hospital, Joslin Diabetes Clinic, Dana-Farber Cancer Institute, and Beth Israel Hospital, along segments of Brookline and Longwood Avenues, Binney and Shattuck Streets and Deaconess Road.

The pedestrian network can often be confusing to the public because, in part, some individual campuses are not well-defined

and in part, because the less formal pedestrian network used by students and employees is not well identified or is not always continuous, with surface parking lots often serving as pedestrian paths. As a result, access to and through individual campuses and buildings is often perceived as more private than is actually the case. Institutional boundaries and buildings are relatively permeable; fences that characterize some parts of the LMA allow daytime access through designated gates; and the number of building entrances controls pedestrian access to some degree. Hospitals and colleges -- semi-public by the nature of their business -- continually balance the need for public access with the need for internal control of that access for security reasons.

Pedestrian pathways into the LMA from the surrounding neighborhoods again typically follow sidewalks along major streets. The eastern or Huntington Avenue "boundary" is particularly impervious due to the architectural design of buildings located along the avenue and due to the presence of the trolley line in the median which serves to channel pedestrian activity into select areas.

Open Space

As illustrated by the accompanying map, the open space network of the LMA is defined largely by the circumferential ring of Frederick Law Olmsted's Emerald Necklace, Muddy River and the Back Bay Fens parklands with open space connections following in north/south and

east/west directions defined by the street system. The northern section of the LMA, north of Longwood Avenue, is predominated by the park-like campuses of the academic institutions. The southern part of the LMA, south of Longwood Avenue, is more densely developed. Within the most dense areas of the LMA exist several important open spaces: Children's Park, the Harvard Medical School Quadrangle, Joslin Park and Shattuck Mall. Joslin Park is the only publicly-owned park in the LMA, although plantings and maintenance are provided entirely by abutting institutions. Children's Park and Shattuck Mall are recent open space initiatives undertaken solely on institutional land, although open to the public.

In addition to these larger green spaces, a system of pedestrian amenities exists throughout the area consisting of standardized seating modules with waste containers and attractive landscaping. These areas were created on institutionally owned parcels left over from development, to provide areas of passive recreation to patients, students, and staff in the area.

Infrastructure

1. Streets and Sidewalks

LMA streets consist of three major two- and four-lane arterials (Brookline, Longwood and Huntington Avenues) and thirteen small one- and two-way city streets; two major four-lane arterial roadways (the Riverway and the Fenway) under the jurisdiction of the Metropolitan District Commission (MDC); and three private ways (Shattuck Street, Crossover Street and Short Street) owned by institutional abutters. For the most part, sidewalks are located on both sides of every street and fall under the jurisdiction of the entity owning the adjacent street.

2. Signage

Signage in the LMA consists of a hierarchy of private, institutional and regulatory signs. In 1984 a unified system of directional, street name, and trailblazer signs was adopted for the LMA, designed and installed by MASCO for its member institutions using private funds, with the review and approval of the City of Boston. The sign system creates an area-wide identify while assisting unfamiliar drivers in getting to their institutional destinations within the LMA. A parallel system (called the "outer loop") was adopted by the MDC in 1985 on roads under its jurisdiction. Again, private funds were used to design and

install the system. All signs are maintained by MASCO.

As the area-wide sign system guides drivers towards their institutional destinations, institutions' own sign system guide visitors around the individual campuses. Each institution has an individual graphic identity, reflected in its building and campus signing. Some institutions such as Children's Hospital have devised an external sign program that actually coordinates with the area-wide program. Several institutions in the Huntington Avenue corridor participated in the Public Space Partnership's Huntington Avenue Sign Program, (PSPP) installing green and gold identification signs at their main campus buildings. In addition, green and gold PSPP street name signs exist at the Louis Prang, Longwood and Francis intersections within Huntington Avenue.

Publicly owned signage in the LMA is regulatory only, consisting of "no parking", "no stopping" and "tow zone" signs. These signs were updated by the Boston Transportation Department in 1987.

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2. Transportation

LMA Employee Transportation Characteristics

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According to 1980 Census data, 28,300 people work in the LMA area. 40% drive to work alone; 16% carpool with one or more people; 26% take public transportation; and the remaining 18% ride a bicycle or walk. This translates into 15,729 auto work trips, 7,395 transit work trips, 4,749 people walking, and 401 people riding a bicycle. The majority of work trips to and from the LMA occur between 6:30 a.m. to 9:00 a.m. and 2:30 p.m. to 6:00 p.m.

41% of these vehicle trips -- car or public transportation -- originate in Boston, with 57% driving and 43% utilizing public transit. Boston accounts for 34% of all auto work trips and 54% of all transit work trips to the LMA.

Six communities combine to generate 63% of all vehicle trip origins to the LMA: Boston (41%); Brookline (7%); Newton (6%); Cambridge (5%); Somerville (2%); and Quincy (2%). 58% of these people drive and 42% use public transportation. These six communities account for 54% of all auto work trips and 83% of all transit work trips to the LMA.

85% of all the people outside these six communities drive to work at the LMA while the remaining 15% take public transportation. This accounts for 46% of all automobile trips and 17% of all transit work trips to the LMA.

Automobile Traffic

According to a 1987 transportation study survey, only 35% of all auto traffic in the LMA is generated from LMA employees; 65% of the total auto traffic in the LMA involves through traffic or other types of trips. A majority of that auto traffic is commuter traffic in and around Boston, including to the LMA. This translates into 44,940 total autos traveling in or through the LMA.(NOTE: CHECK WITH MASCO TO SEE IF CORRECT INTERPRETATION OF THE PERCENTAGE TO TRANSLATE INTO A NUMBER.PEAK OR AWDT?) LMA arterials are part of a central network serving a large geographic area, including services within the LMA. Total auto traffic flows during peak hours include commuter travel inside and outside the LMA (59%); business-related trips throughout the city (10%); student travel (9%); medical appointments (7%); medical visitation (2%) and shopping, social or other travel within or outside the LMA (13%).

Riverway and Huntington Avenue are the most utilized streets for through traffic during commuting hours. Surveys on Riverway showed that over 80% of the traffic in the a.m. and p.m. for both northbound and southbound travel was through traffic. Huntington Avenue near Brigham Circle showed through traffic in both

directions at around 75% for a.m. and p.m. travel, while it dropped to around 55% in a.m. and p.m. travel on segments near Louis Prang Street.

Brookline Avenue showed heavy through traffic both ways at 59% and above for the p.m. period, but lower through traffic in the a.m. at around 37%. Longwood Avenue had the lowest percentage of through traffic in both directions. Through traffic accounted for 18% of all eastbound and 28% of all westbound traffic while evening through traffic increased to 58% and 37% respectively.

As a result of through traffic growth and residential and institutional development within the LMA, traffic volumes have increased along many of these streets since 1975. In the 1987 study, Riverway experienced an increase of approximately 6,000 vehicles per day (vpd) over 1975 levels on sections north and south of Brookline Avenue, which carried 20,000 vpd and 33,000 vpd respectively in 1975. Huntington Avenue north of Longwood and Brookline Avenue south of Pilgrim road increased approximately 2,000 vpd over 1975 levels of 24,000 vpd and 27,000 vpd respectively. Francis Street had the greatest increase, approximately 8,000 vpd over 1975 levels of 5,000 vpd. This increase on Francis Street was caused by such developments as the building of two new garages, the consolidation of four hospitals, and changes in the street patterns. Other streets such as Longwood Avenue, which carries between 8,000 vpd and 12,000 vpd on various sections, and Brookline Avenue south of Longwood, which carries

28,000 vpd, showed no changes.

This increased volume has created congestion and a deficient level of service (LOS E-F) at five intersections within the LMA. These include: the Riverway at Brookline Avenue and Huntington Avenue at South Huntington during both the a.m. and p.m. peak hours; the Riverway at Longwood Avenue, Brookline Avenue at Longwood Avenue, and Huntington Avenue at Francis Street during the p.m. peak period. In addition, many of these same intersections are operating at or over vehicle capacity. They include: in the a.m. peak, Riverway at Brookline Avenue and Brookline Avenue at Francis Street; in the p.m. peak, Riverway at Brookline Avenue and Huntington Avenue at South Huntington.

Several high accident prone areas can be found within these congested arteries as well. Almost half of all roadway segment accidents within the LMA occurred on Longwood Avenue and Brookline Avenue. High accident intersections also fall within the most congested roadways. Specific intersections along Brookline Avenue, the Riverway, Longwood Avenue, Huntington Avenue, and Francis Street make up the high accident intersection locations.

Public Transportation

MBTA services to the LMA area include two branches of the Green Line, the Arborway/Brigham Circle (E-Line) and the Riverside (D-Line), and four bus routes, 47, 60, 65, and 66.

According to transportation surveys, approximately 5,000 people ride one of these MBTA lines to the LMA between 6:00 a.m. and 9:15 a.m. The Arborway line accounts for almost 50% of all MBTA commuters to the LMA during this time period, with 1,600 coming from the downtown direction and 800 coming from the Jamaica Plain direction. Bus Route 47 handles approximately 18%, or 900 riders. The Riverside line carries about 17%, or 875 riders, with 60% coming from the west and 40% coming from the downtown direction. The remaining 15% of the passenger traffic, or 750 riders, is handled by Bus Routes 60, 65 and 66.

Service varies among these lines and routes. Green line service on both the D and E line runs every ten minutes from 5:30 a.m. to midnight seven days a week. The E-Line, which is under construction, has a temporary replacement bus and Bus 39 travels this same route with as regular a frequency. The E-Line also stops at Forest Hills, a major bus transfer stop. The D-Line provides service to park-and-ride facilities near the I-90 and I-95 interchange as well.

Bus Route 47, covering most of Longwood and Brookline Avenues and serving Roxbury and Central Square, and Bus Route 66, serving Roxbury and Brookline and Allston, have service every ten minutes during peak hours. However, during mid-day hours, service is about every twenty minutes and drops to thirty minutes during evenings and weekends. The buses run past midnight seven days a week. Bus

Route 47 also connects with the Orange Line at Ruggles Station and with the Red Line at Andrews Square.

Bus Routes 60 and 65, which parallel each other along Brookline Avenue until 60 follows Route 9 and 65 heads toward Brighton Center, are less frequent. Peak hour intervals are about twenty minutes apart while mid-day service drops to thirty minutes. 60 runs every thirty minutes in the evening and runs hourly on Sundays. 65 has no evening or Sunday service.

The MBTA's basic route structure of radial rail lines emanating from Downtown Boston with bus routes feeding those lines is not well suited for providing comprehensive and convenient mass transit service to the LMA. Bus lines are typically shorter than other cities as a result of this configuration and therefore provide less through service to this heavily utilized area. For example, a dozen feeder buses serve Ruggles Station, yet only one bus continues for an additional mile to the LMA.(NOTE: CHECK IS IT 12 OR 13 BUSES). Only Bus 47, which serves a small portion of Roxbury, provides cross-town transportation to the LMA with stops at Ruggles Station. This system creates a disincentive -- or at least an inconvenience -- for ridership as many people must transfer in order to get to the LMA.

Service hours is also a problem for people working afternoon and evening shifts. Infrequent bus service in the evening creates disincentives for both second and third shift employees, while Bus

Route 65, with no evening or Sunday service, prohibits the use of public transportation for employees from these areas.

Other service issues include the intangibles of reliability and comfort. The E-Line, which runs along regular street traffic lanes and therefore faces the same delays as auto traffic, is considered the most unreliable of all mass transit to the LMA area. Overcrowding and breakdowns are other sources of frustration for riders on both the D and E lines. In the afternoon, rail cars are typically overcrowded by the time they reach the LMA. The Boeing-Vertol rail cars, which have had serious deficiencies and regular breakdown problems over the years, have been a constant source of trouble for the MBTA and its riders. The poorest performing cars, however, are now being phased out and replaced by 100 rail cars from Kinki of Japan.

During peak hours, the Green line also faces the problem of cars stacking up and therefore causing an irregular flow because of the sharing of a central rail with other branches of the Green Line in the downtown to Kenmore Square area. Bus and train station shelters are an important component of service issues as well. In the LMA area, many areas are without shelters or they are partially exposed to the elements. Finally, many of the maps to identify changes in the routes are out of date. Bus schedules also are printed to reflect beginning and ending times, which make it difficult for people to know the schedule as it relates to the LMA area. Together these service issues make travel by public

transportation, at times, more difficult and unreliable, and therefore, less likely.

Bus route reliability were rated average and above as follows: #66: 66%; #47: 67%; #65: 82%; and #60: 83%. No comparable figures exist for the D and E lines.

MASCO Transit System -- Metrobus

MASCO, through its subsidiary Metrobus, operates four bus routes: M1, M2, M4, and M5.

Approximately 2,300 people use this service during morning peak traffic hours, both for satellite parking and to commute from homes in particular neighborhoods. 1,400, or about 60%, take a Metrobus from satellite parking facilities. 900, or about 40%, use this service as a primary source of transportation from Allston, Brookline, or Cambridge, with about 90% of these people picking up this service in Cambridge alone.

M2 and M5 provide bus service to neighborhoods. M2, which runs to Harvard Square and other Cambridge points along Massachusetts Avenue, has service every ten minutes during rush hour, every twenty minutes at mid-day, and hourly runs at night and on Saturdays. It carries approximately 825 people during the morning peak hours. M5, which runs through parts of Brookline and Allston, runs every 17 to 34 minutes during the morning and every thirty

minutes during the afternoon rush hour. It offers no mid-day, night (after 8:30 p.m.), or Saturday service. M5 also services the Western Avenue satellite parking facility near the Allston-Cambridge Turnpike exit. Four of its thirteen morning trips are non-stop from this site via the Turnpike. M5 carries approximately 90 people during the morning peak hours. (NOTE: CHECK IF M5 STILL IN EXISTENCE)

M1 and M4 provide bus service only to satellite parking facilities. M1, which services the Fenway/Kenmore parking area, runs every eight minutes during morning and afternoon peak hours. During mid-day hours, M2, which operates every twenty to thirty minutes during this time period, reroutes to M1 sites to continue this service throughout the day. M1 offers no night or Saturday service. It carries approximately 825 people during morning peak hours. M4, which services the Prentiss Street parking lot near Parker Street, runs every eight minutes in the morning and every ten to fifteen minutes in the afternoon. It provides no mid-day, night or Saturday service. M4 carries approximately 550 people during morning peak hours.

M2 bus service, supported solely by funding from Harvard University, is free to all student, faculty, and staff of the Harvard Medical, Dental and Public Health schools. It is also available for 65 cents per trip to members of the Harvard University community and for 75 cents per trip to LMA Harvard affiliates (the major medical institutions). M2 is not open to the

general public. The price for M5 bus service is either $38 per month for park-and-ride or $27.30 per month for the bus ticket alone. M1 and M4 bus fares are rolled into the price of parking at these facilities, which is approximately $45 to $50 per month (NOTE: CHECK ALL PRICES FOR 1990 LEVELS). No direct fee is charged to riders on these bus routes.

Service issues include thatMetrobus service hours are a possible disincentive for utilizing satellite parking facilities. With only emergency mid-day service available to lots on the M5 and M4 routes, and thirty minute intervals between transit to lots on the M1 route, many people may be discouraged from using these services, seeking instead on-site spots and limiting the pool of general public parking. No mid-day service may be the central reason why M5, despite its low cost, has so few patrons and why M4 has fewer riders than M1. (NOTE: CHECK TO SEE IF THESE LOTS ARE FILLED).

Similarly, lack of night, Saturday, and Sunday service on M1, M4, and M5 may prevent use of these services for people on second and third shifts who cannot -- or will not, for security reasons -- use public transportation as a means for getting to and from work. Harvard's M2 bus service, by being closed to the public, may also be encouraging additional auto travel to the LMA area. Finally, information services about these lots are an important component to usage as well.

Other Transportation

Marathon Line, a private bus company, offers hourly bus service between points along Huntington Avenue and Worcester with stops along Route 9, including the Shoppers World in Framingham. (NOTE: CHECK TO SEE IF PEOPLE CAN PARK HERE FOR THE DAY) The cost from Framingham is $2.50 each way with discounts offered for ticket books of ten.

MASCO, in conjunction with the state-funded Caravan program, offers computerized carpool/vanpool matching services for LMA employees. Vanpools recieve free parking at the Service Center Garage on Francis Street.

Several taxicab companies also serve the LMA area.

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3. Parking

At present there are 52 parking facilities -- surface lots and garages -- within the LMA boundaries with a total capacity of 7,094 parking spaces. In addition, there are also 1,211 curbside parking spaces within the LMA boundaries along private and public roadways. Outside the LMA there are 3,856 spaces in 19 facilities available to employees from LMA institutions. Combined, all of these facilities and curbside spaces make available a total parking supply of 12,161 spaces.

Within the LMA boundaries, 2,734 spaces, or 33% of the 8,305 spaces located within the LMA, are available for use by the general public. 1,854, or 68% of these spaces, are in surface lots or garages. (NOTE: WE NEED UPDATED FIGURES ON HOW MANY VISITOR PARKING SPACES ARE AVAILABLE IN THE FOUR GARAGES BUILT SINCE 1987). * The remaining 880 spaces, or 32%, are curbside metered parking (455 spaces) and unmetered spaces which are restricted to certain hours (425 spaces).

Within the LMA, the majority of parking spaces are located in parking garages. MASCO or MASCO member institutions control 6,647 spaces within the surface lots or garages. Non-member institutions control the remaining 447 spaces. Nearly all of these lots are owned by the vari‸uos institutions or MASCO. (NOTE: CHECK TO SEE IF

ALL ARE OWNED BY LMA INSTITUTIONS OR MASCO) 5,240 spaces, or 74% of the 7,094 spaces in surface or garage lots within the LMA, are allocated to monthly permit parking.

The city controls 1,090 curbside parking spaces, including 210 resident permit spaces, 455 metered spaces, and 425 unmetered, but restricted spaces. The remaining 121 curbside spaces are on private roadways.

Outside the LMA, MASCO or MASCO member institutions control 3,744 spaces, with remote lots being primarily leased from other owners. Non-member institutions control the remaining 112 spaces. All of these spaces are for monthly permit parking. In some of these leased facilities, however, there are additional parking spaces which are rented to other institutions outside the LMA or are available to the general public, but they are not controlled by Masco or other LMA institutions.

Daily and hourly parking rates are generally considered to be comparable to the central business district. 1987 surveys indicated that the median daily rate is about $12. Monthly rates, however, are generally considered to be below that of the central business district. 1987 surveys indicated that the average rate charged per month for parking within the LMA is about $52. Outside the LMA, the average rate charged is about $37. The lower cost of monthly permit parking at facilities within and outside the LMA is viewed by the institutions as a necessary employee subsidy to attract and retain

a high quality work force.

RK DRAFT 5/29

LONGWOOD AVENUE GUIDELINES

I. Problems and Opportunities

Longwood Avenue functions as one of the two main streets of the medical area - Brookline Avenue is the other - and their intersection is perceived as the heart of the area, but no special design treatment marks this location. In formal terms, however, the classical symmetry of the Longwood and Louis Pasteur intersection, with its tree-lined alley heading north, and grand grassy mall to the south, suggests that the center is here. This lack of clarity is typical of the problems of Longwood Avenue.

The Avenue is made up of elements of several different typologies, but no single organizing scheme dominates. The Children's Hospital dome and medical school mall begin to suggest an organization based on iconography, but little is done to reinforce the prominence of the icons. Facades that address the street with entrances that are located at the sidewalk suggest a streetwall organization on some blocks, but on other blocks endwalls without entrances, entrances set back from the sidewalk, or open spaces of one sort or another fail to continue the streetwall. The open spaces vary from parking lots and service yards to courtyards and parks but fail to create a coherent pattern. The buildings

themselves include two-story frame buildings with walls of aluminum siding, five-story stone buildings with classical porticos, and fifteen-story buildings with blank concrete walls. No clear sense of unity emerges from this diverse collection of elements.

With several new buildings planned for construction in the near future along Longwood Avenue, the time is appropriate for urban design solutions to the problems of the street. Coherent patterns can be created from existing elements through the application of some basic principles of organization.

II. Analysis and Recommendations

A. Iconography

1. The Dome

The dome of Children's Hospital Hunnewell Building, the Harvard Medical School Quadrangle, and the crescent-shaped intersection of Louis Pasteur and Longwood are the major icons of the Avenue and symbolically of the whole area. Emphasis on these elements can improve a sense of

orientation on the Avenue and a sense of institutional identity. View of these icons should be enhanced and interaction with them should be strengthened.

The dome can be seen along the entire length of Longwood Avenue. Because of a slight bend in the street right at the Hunnewell Building, the dome appears to be located in the middle of the street as seen from either Huntington or Riverway ends, and because of the topography which conceals the base of the building, the dome appears to float over the street when viewed from the west. Tree planting on both sides of Longwood can reinforce daytime views of the dome and illumination from spotlights on nearby buildings could enhance evening views.

2. The Quad

The quadrangle functions as the major formal open space of the Longwood Medical Area. Approved plans will create a parking garage under the quadrangle and a recreation of the original

Olmsted Plan for the plantings on the surface. The prominence of the contemplative character of this highly figurative space, bordered on three sides by porticoed classical marble buildings, should not be challenged. Other open spaces along the Avenue should be designed to acknowledge the primary importance of the quadrangle. Additional seating should be included in the reconstruction to enhance passive use of the space.

3. The Semi-Circle

concept to be visualized at
Huntington & Longwood
& Long/Brook
(Winsor)

The semi-circle of the Pasteur intersection and the similar (though not identical) massing and facade articulation of the adjacent Vanderbilt and Richardson Halls is unique in Boston. Views of the quadrangle to the south and the Fens and the lights of Fenway Park to the north extend the green feeling of the intersection and tree-lined Louis Pasteur. The semi-circle plan motif could be enhanced by anticipating and recalling it in other intersections. Brookline and Longwood could be reconfigured in a similar way when the Mass. College of Art site is redeveloped and a small piece of the Winsor School playing field is contributed for landscape improvements and

temporary public use. The Longwood and Huntington intersection could be treated with a similar theme when Sparr's Drug, _________ Huntington (Mass Art student supplies) are redeveloped.

B. Building Form

1. Height Datum

Although building heights vary between one and fifteen stories, the more prominent buildings establish a height datum line of 5-6 floors. This height is reinforced by strong articulation of facade elements like pilasters and cornices, while the buildings that are outside the normative range are usually unarticulated - new buildings should acknowledge and respect this datum line.

2. Setbacks

Longwood Avenue today enjoys a lot of sunlight and freedom from building-induced winds at the street level. New construction should preserve these environmental conditions by avoiding extremes of height typified by examples in the area like

Build to lines at Long/Brook for any MCA

Pg 6

Brigham and Women's in-patient and research towers. Building setbacks above the 5-6 story streetwall height should be equal to height (i.e. 45°).

1' up / 1' back above base

3. Maximum Height and Density

less concern for off-street building

Overall building height and density should respond to location along the Avenue and should be designed with attention to the skyline image being created. The Brookline and Longwood location which already has one tower could accommodate greater height and density than locations at the edges of the district and ends of the Avenue near residential uses. If traffic congestion can be adequately dealt with, the corner could eventually be developed as a center of the LMA with taller elements as parts of all four corners.

4. Streetwall

regular streetwall setback

Building streetwall setbacks from the sidewalk vary substantially along the Avenue. In general, buildings at important intersections have, and in the future should continue to have deeper fron

bigger sidewalks up to entrances.

yard setbacks than mid-block buildings. Where existing mid-block buildings have ddep front yards, tree plantings should be introduced to strengthen the streetwall line.

5. Streetfront

As a rule, buildings on Longwood should have front doors on Longwood rather than turning an end toward the street. The front doors should be highly articulated in plan and elevation, to relate to the better existing buildings, to enhance the identity of the various institutions, and to accommodate the clustering of pedestrians that normally occurs at building entries.

C. Open Space

1. Hierarchy

courtyards

Recognizing that the quad is the dominant open space on Longwood Avenue, designers should create subdominant spaces that enhance the pre-eminence of the quadrangle while providing attractive and functional areas. An appropriate form for the

subdominant space would be the courtyard, some examples of which already exist on the Avenue at 370 Longwood, a 4 1/2-story brick residential building, at Vanderbilt Hall, a fully enclosed dormitory courtyard, and at Richardson Hall which, when completed with Brigham and Women's Research Building replacing the old nurses residence, will provide a landscaped entrance court with parking and tree plantings, enclosed on three sides and open, behind decorative gates and fencing to Longwood Avenue. New development at the two Mass Art sites, Harvard Dental School, Mass College of Pharmacy, and Windsor School, should capitalize on the courtyard motif, with variations appropriate to the program and location.

2. Main Street

Longwood Avenue's major function as a main street, a street that takes you to the front door of many of the LMA's institutions, should be physically enhanced. Two aspects need strengthening; first, the street as a corridor linking one institution with another could be emphasized with a continuous row of street trees along both sidewalks, and with

Olmsted Plan for the plantings on the surface. The prominence of the contemplative character of this highly figurative space, bordered on three sides by porticoed classical marble buildings, should not be challenged. Other open spaces along the Avenue should be designed to acknowledge the primary importance of the quadrangle. Additional seating should be included in the reconstruction to enhance passive use of the space.

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uniform lighting and street furniture. (The acorn lights seem appropriate. A park bench type, trash recepticle, and newspaper vending machine should be selected as standards.) Second, the street as a transition to the institution's front door needs emphasis. Changes in the pattern and materials of paving, in the rhythm of tree planting, and in the location and type of street furniture can help to announce the event of arrival and the identity of the various institutions.

3. Vistas and Views

save what you've got

Long/Brookline intersection and back [illegible]

A series of distant and medium-distance views help to orient the pedestrian along the Avenue. In addition to the major view of the Hunnewell dome, the views of the Pru and Hancock, the Sears tower at the end of Pilgrim Road, Fenway Park lights at the end of Louis Pasteur, green space at the end of Palace Road, Blackfan Street north, and Longwood west, and notable buildings looking south down the Harvard Medical School quadrangle and south down Blackfan towards the Children's ought to be preserved to allow what sense of connection to green spaces and to the surrounding city fabric that still exists to

Protected Views Diagram

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4. Semi-Public Space

Much of what could be very attractive open space at Harvard Dental, Pharmacy, Brigham's Research, Gardner House, Mass Art, 370 Longwood, and Palace Road south of Longwood, is compromised by accommodating cars. With new parking facilities planned or under construction at the quadrangle, the Temple Israel lot, and the Mass College of Art site, and a new deck recently completed off Louis Pasteur, there exists an opportunity to reclaim and improve some prominent spaces for passive recreational use, and to plan new projects with primacy for pedestrians.

5. Sidewalks

Pedes. counts ask sidewalk width

Dimensions are barely adequate to accommodate the flow of pedestrians. As sites become available for redevelopment, especially at important intersections (i.e. Mass Art and Flagg Drug at Huntington and Mass Art and Winsor School at Brookline Avenue) front yard space should be made available for pedestrian use in amounts ample to accommodate whatever bus shelters, tree plantings, benches, and other amenities that are appropriate.

[redacted]

C.4. RESEARCH SPACE

a. Waste Generation

Medical waste represents an unavoidable by-product of clinical care and many forms of medical research. The circumstances under which waste is generated and the means by which it is disposed also represent significant public health and safety concerns. These types of concerns are greatest among residents who live closest to the source of the waste generation. Guidelines for addressing waste-related issues are as follows:

1. Drainage Systems

Drainage systems must conform to all requirements established by the Massachusetts Water Resources Authority (MWRA) and the Boston Water and Sewer Commission (BWSC). Among these requirements are that laboratory sinks be served by a separate "acid" waste drainage system. Under this system, waste drains by gravity to a mix tank, then to a trim tank, and is then discharged from the building separately from sanitary wastes. Mix and trim tanks shall be constructed of polypropylene and have a pH sensor that will automatically actuate mixers and chemical metering pumps. The control panel shall include a microprocessor digital pH controller, recorder and annunciator.

b. Environmental Concerns

In much the same way that medical wastes are a source of concern, environmental issues such air pollution due to fume hood exhausts and/or incineration of laboratory materials also represent concerns. (to be continued)

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